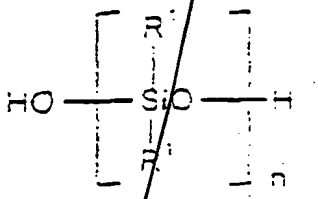
CLAIMS

1. Single-component organopolysiloxane compositions which are stable on storage in the absence of moisture and which crosslink to translucent and adherent elastomers in the presence of moisture, characterized in that they are capable of being obtained by carrying out, in a single closed reactor with stirring, operating according to a batchwise mode or a continuous mode, successive stages 1 to 3 defined below:

- stage 1: functionalization stage, during which:
  (i) at least one reactive linear diorganopolysiloxane A comprising a hydroxyl group at each chain end, of formula:



(I)

in which:

- the R^1 substituents, which are identical or different, each represent an aliphatic, cyclanic or aromatic, saturated or unsaturated, substituted or unsubstituted, C_1 to C_{13} monovalent hydrocarbonaceous radical;
- n has a value sufficient to confer, on the diorganopolysiloxanes of formula (I), a

dynamic viscosity at 25°C ranging from 1 000 to 1 000 000 mPa·s;

(2i) and at least one hydroxylated organopolysiloxane resin B exhibiting, in its structure, at least two different units chosen from those of formulae $(R^1)_3SiO_{1/2}$ (M unit), $(R^1)_2SiO_{2/2}$ (D unit), $R^1SiO_{3/2}$ (T unit) and SiO_2 (Q unit), at least one of these units being a T or Q unit and the R^1 radicals, which are identical or different, having the meanings given above with respect to the formula (I), the said resin having a content by weight of hydroxyl group ranging from 0.1 to 10%;

(3i) are reacted with at least one polyalkoxysilane C of formula:

$$(R^2)_aSi[(OCH_2CH_2)_bOR^3]_{4-a} \quad (II)$$

in which:

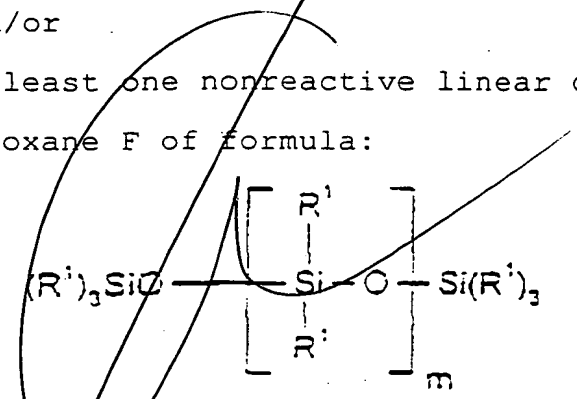
- the R^2 substituent represents an aliphatic, cyclanic or aromatic, saturated or unsaturated, substituted or unsubstituted, C_1 to C_{13} monovalent hydrocarbonaceous radical;
- the R^3 symbols, which are identical or different, each represent a linear or branched C_1 to C_8 alkyl radical;
- a is zero or 1;
- b represents zero or 1;

(4i) the reaction of (i) and (2i) with (3i) being carried out in the presence of a catalytically effective amount of a functionalization catalyst D, with the exception of the use of an organic titanium derivative;

(5i) it being possible for the reaction medium of stage 1 additionally to comprise:

+ at least one aliphatic C_1 to C_3 alcohol E; and/or

+ at least one nonreactive linear diorganopolysiloxane F of formula:



$$(R^1)_3SiO\left[\begin{matrix}R^1\\ |\\ Si-O\\ |\\ R^1\end{matrix}\right]_m Si(R^1)_3 \qquad (III)$$

in which:

- the R^1 substituents, which are identical or different, have the same meanings as those given above for the reactive diorganopolysiloxane A of formula (I);
- m has a value sufficient to confer, on the polymers of formula (III), a dynamic viscosity at 25°C ranging from 10 to 200 000 mPa·s;

• stage 2: blending (or compounding) stage, during which:

(6i) an inorganic filler G based on amorphous silica in the form of a solid;

(7i) an effective amount of a curing catalyst H comprising at least one organic titanium derivative chosen from the group consisting of:

+ H1 monomers of formula:

$$Ti[(OCH_2CH_2)_c OR^4]_4 \quad (IV)$$

in which:

- the R^4 substituents, which are identical or different, each represent a linear or branched C_1 to C_{12} alkyl radical;
- c represents zero, 1 or 2;
- with the conditions according to which, when the c symbol represents zero, the R^4 alkyl radical has from 2 to 12 carbon atoms and, when the c symbol represents 1 or 2, the R^4 alkyl radical has from 1 to 4 carbon atoms;

+ H2 polymers resulting from the partial hydrolysis of the monomers of formula (IV) in which the R^4 symbol has the abovementioned meaning with the c symbol represent zero;

(8i) optionally at least one nonreactive linear diorganopolysiloxane F corresponding to the formula (III) mentioned above; and

(9i) optionally at least one auxiliary agent I known to a person skilled in the art, which is generally chosen, when it is needed, according

to the applications in which the compositions according to the present invention are employed;

are introduced in any order into the functionalization medium of stage 1, which is kept stirred;

- stage 3: finishing stage, during which the base blend obtained, kept stirred, is subjected to a devolatilization operation carried out under a pressure below atmospheric pressure.

2. Compositions according to claim 1, characterized in that the following are used to prepare the single-component organopolysiloxane compositions, on the basis of 100 parts by weight of hydroxylated linear diorganopolysiloxane(s) A:

- from 3 to 30 parts of hydroxlyated resin(s) B,
- from 2 to 15 parts of polyalkoxysilane(s) C,
- a catalytically effective amount of functionalization catalyst D,
- from 0 to 2 parts of alcohol(s) E,
- from 0 to 30 parts of nonreactive linear diorganopolysiloxane(s) F,
- from 2 to 40 parts of siliceous filler G,
- from 0.3 to 5 parts of organic titanium derivative(s) H, and
- from 0 to 20 parts of auxiliary agent(s) I.

3. Compositions according to claim 1 or 2, characterized in that the R^1 substituents of the

hydroxylated polymers A, of the hydroxylated resins B and of the optional polymers F are taken from the group formed by:

- alkyl and haloalkyl radicals having from 1 to 13 carbon atoms,
- cycloalkyl and halocycloalkyl radicals having from 5 to 13 carbon atoms,
- alkenyl radicals having from 2 to 8 carbon atoms,
- mononuclear aryl and haloaryl radicals having from 6 to 13 carbon atoms,
- cyanoalkyl radicals in which the alkyl linkages have from 2 to 3 carbon atoms.

4. Compositions according to claim 3, characterized in that the R^1 substituents are the methyl, ethyl, propyl, isopropyl, n-hexyl, phenyl, vinyl and 3,3,3-trifluoropropyl radicals.

5. Compositions according to any one of claims 1 to 4, characterized in that the hydroxylated organopolysiloxane resins B are resins not comprising a Q unit in their structures.

6. Compositions according to any one of claims 1 to 5, characterized in that, as regards the polyalkoxysilanes C of formula (II):

- the R^2 substituents are the same radicals as those mentioned above in claim 3 for the R^1 substituents;
- the R^3 radicals are C_1 to C_4 alkyl radicals.

7. Compositions according to claim 6, characterized in that the polyalkoxysilanes C of formula (II) are chosen from: $Si(OC_2H_5)_4$, $CH_3Si(OCH_3)_3$, $CH_3Si(OC_2H_5)_3$, $(C_2H_5O)_3Si(OCH_3)$, $(CH_2=CH)Si(OCH_3)_3$ and $(CH_2=CH)Si(OC_2H_5)_3$.

8. Compositions according to any one of claims 1 to 6, characterized in that use is made, as functionalization catalyst D, of lithium hydroxide of formula LiOH or $LiOH \cdot H_2O$.

9. Compositions according to claim 8, characterized in that use is made of 0.005 to 0.5 mol of lithium hydroxide per 1 mol of silanol groups contributed, first, by the hydroxylated polymer(s) A and, secondly, by the hydroxylated resin(s) B.

10. Compositions according to any one of claims 1 to 9, characterized in that the inorganic filler G is chosen from treated or untreated precipitated silicas in the powder form, treated or untreated fumed silicas in the powder form, or their mixtures, the BET specific surface areas of these silicas being greater than 40 m^2/g.

11. Compositions according to any one of claims 1 to 10, characterized in that the curing catalyst H is chosen from organic titanium derivatives, including the H1 monomers of formula (IV) and the H2 polymers resulting from the partial hydrolysis of the H1 monomers, in the structure of which the R^4 symbol is

taken from the group formed by the radicals: methyl, ethyl, propyl, isopropyl, butyl, isobutyl, hexyl, 2-ethylhexyl, octyl, decyl and dodecyl.

12. Compositions according to claim 11, characterized in that the curing catalyst is chosen from the following H1 monomer titanates, taken alone or as a mixture: ethyl titanate, propyl titanate, isopropyl titanate or butyl (n-butyl) titanate.

13. Translucent elastomers in a thin layer ranging in particular from 0.3 to 3 mm which adhere to various substrates and which are obtained by curing, at temperatures ranging from 5 to 35°C under the action of moisture, compositions according to any one of claims 1 to 12.